



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.



Letter to the editor

Psychiatric comorbidities in chronic orofacial pain during COVID-19 pandemic

ARTICLE INFO

Keywords

COVID-19 pandemic
 Oral psychosomatic disorders
 Atypical odontalgia
 Burning mouth syndrome
 Psychiatric comorbidity
 Psychological health condition

Dear editor,

The pandemic of the coronavirus infection 2019 (COVID-19) has drastically changed people's daily life and the prevalence of depression and anxiety disorders were increased by 25% [1]. Moukaddam et al. suggested that the pandemic also exacerbate existing mental conditions [2]. Regarding our published results, psychiatric comorbidities are frequently observed in the patients with oral psychosomatic disorders (OPSD) [e.g., burning mouth syndrome (BMS), oral cenesothopathy (OC), atypical odontalgia (AO), phantom bite syndrome (PBS), etc.] [3,4]. We hypothesized such characteristics in OPSD may also be impacted by 'syndemic' which is made up of the words 'synergy' and 'epidemic' and in which multiple conditions overlap and interact to worsen health outcomes [5]. Hence, the aim of this study is to investigate the difference of clinical characteristics in the patients with OPSD between before and during the COVID-19 pandemic.

Two groups of patients who first visited the psychosomatic dentistry clinic in Tokyo medical and dental university hospital between two periods of time were involved in this study: (1) group before pandemic: April 2019 to March 2020; (2) group during pandemic: April 2021 to March 2022. All clinical data was retrospectively collected by medical chart reviewing (Ethical No: D2013-005). The date for diagnosis of OPSD and psychiatric comorbidities were assessed with ratio, since the number of patients was directly affected by regulation of social activities including visiting hospital.

In terms of number of new patients visits, there is a decrease of 25.4% in the group during pandemic ($n = 391$) compared to in the group before pandemic ($n = 524$, Table 1). Demographic characteristics analysis revealed no significant differences in gender distribution and the duration of illness between the two groups. However, the group during pandemic was significantly younger than the group before pandemic (59.9 ± 14.1 vs. 56.4 ± 16.0 , $p = 0.001$). There is also a significant increase ratio of referral from psychiatrists (27.9% vs. 39.6%, $p < 0.001$), ratio of psychiatric comorbidities (50.0% vs. 59.6%, $p < 0.001$) and total scores of Zung's self-rating depression scale (44.6 ± 10.9 vs. 46.8 ± 10.4 , $p = 0.003$) in the group during pandemic compared to those of the group before pandemic. Furthermore, the ratio of patients

with BMS significantly decreased (58.6% vs. 48.6%, $p = 0.003$), while OC, AO and PBS patients tended to increase without any significance. As for AO patients, significantly higher rate of psychiatric comorbidities was observed in the group of during pandemic (44.3% vs. 63.2%, $p = 0.046$) compared to that in the group of before pandemic with the mostly found diagnosis of depressive disorders ($n = 10$) followed by anxiety disorders ($n = 9$), bipolar disorders ($n = 4$), somatic symptom disorders ($n = 3$), schizophrenia ($n = 3$) and so on. In a previous report, patients with psychological disorders were suggested to be impacted more severely by the COVID-19 pandemic, in compared to patients with other physical health conditions [6]. Since patients with psychiatric comorbidities that relate to vulnerability to distress might have their psychological conditions worsening, their chronic pain and discomfort in oral region would therefore be exacerbated during the pandemic [7]. The number of the oral psychosomatic disorders with psychiatric comorbidities consequently might increase during pandemic especially in AO. On the other hand, we interestingly observed a tendency of decreased ratio of BMS patients while increase OC, AO and PBS. Since BMS patients without psychiatric comorbidity were coping well with the pandemic [8], their oral symptoms might not be got too worse to visit hospital during COVID-19 pandemic. Moreover, the COVID-19 syndemic might be entangled the symptoms of OPSD. This study found an increased rate of psychiatric comorbidity in chronic orofacial pain during pandemic. However, the effect size was small and may be the result of the presence or absence of psychiatric disorders altering visit behavior during pandemic, rather than changes in disease pathophysiology. Besides psychological factors, multivariable aspects of economic changes, working state, social isolation and so on may also have inter-related roles [1,6], and would change in the alignment with the circumstances of COVID-19 pandemic and syndemic [7]. Further study with long-term observation is therefore needed.

Funding

This research was funded by KAKENHI from the Japanese Society for the Promotion of Science (JSPS) Grant Number 22K10141 to AT and Grant Number 19K19211 to MW. The funder was not involved in the

<https://doi.org/10.1016/j.jpsychores.2023.111420>

Received 27 December 2022; Received in revised form 16 June 2023; Accepted 18 June 2023

Available online 21 June 2023

0022-3999/© 2023 Elsevier Inc. All rights reserved.

Table 1

	Before pandemic (N = 524)	During pandemic (N = 391)	p-values
Sex: female (%) / male (%)	413 (78.8%) / 111 (22.2%)	325 (83.1%) / 66 (16.9%)	0.103
Age, years old	59.9 ± 14.1	56.4 ± 16.0	0.001
Duration of illness, months	40.6 ± 56.6	42.3 ± 57.3	0.659
Scores of Zung's self-rating depression scale	44.6 ± 10.9	46.8 ± 10.4	0.003
BMS (%)	307 (58.6%)	190 (48.6%)	0.003
OC (%)	154 (29.4%)	125 (32.0%)	0.402
AO (%)	79 (15.1%)	68 (17.4%)	0.346
PBS (%)	35 (6.7%)	39 (10.0%)	0.071
Referral from psychiatrists			
Total	146 (27.9%)	155 (39.6%)	< 0.001
BMS	70 / 307 (22.8%)	58 / 190 (30.5%)	0.058
OC	66 / 154 (42.9%)	57 / 12 (45.6%)	0.716
AO	20 / 79 (25.3%)	28 / 68 (41.2%)	0.052
PBS	10 / 35 (28.6%)	19 / 39 (48.7%)	0.097
Psychiatric comorbidities			
Total	272 (50.0%)	233 (59.6%)	< 0.001
BMS	150 / 307 (48.9%)	100 / 190 (52.6%)	0.460
Sc	6	2	
BD	3	5	
Dep	45	36	
Anx	25	21	
SSD	22	18	
OC	104 / 154 (67.5%)	85 / 125 (68.0%)	1.000
Sc	7	3	
BD	7	4	
Dep	37	10	
Anx	14	9	
SSD	23	3	
AO	36 / 79 (44.3%)	43 / 68 (63.2%)	0.046
Sc	1	3	
BD	0	4	
Dep	9	10	
Anx	7	9	
SSD	5	3	
PBS	19 / 35 (54.3%)	27 / 39 (69.2%)	0.233
Sc	3	1	
BD	2	2	
Dep	6	4	
Anx	4	9	
SSD	4	4	

Values are presented as mean ± standard deviation or frequency (percentage).

BMS: burning mouth syndrome, OC: oral cenesthopathy, AO: atypical odontalgia, PBS: phantom bite syndrome.

Sc: schizophrenia, BD: bipolar disorder, Dep: depressive disorders, Anx: anxiety disorders, SSD: somatic symptoms disorder.

Bold numbers indicate significant differences with $p < 0.05$.

study design, collection, analysis, interpretation of data, the writing of this article or the decision to submit it for publication.

Authors contributions

CM participated in data acquisition and analysis and writing first draft preparation. MW participated in data collection and review and edited the manuscript. TT and GN reviewed and edited the manuscript. CT, RT and YK participated in collecting data. TN and AT developed the theory and supervised the research. AT designed the research and administered the project. All authors read and approved the final article.

Declaration of Competing Interest

The authors declare that this case report was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

References

[1] World Health Organization, Mental health and COVID-19: Early evidence of the pandemic's impact, *Sci. Brief* (2022) 1–11, 2 March, https://www.who.int/publications/i/item/WHO-2019-nCoV-Sci_Brief-Mental_health-2022.1, 2 March.
 [2] N. Moukaddam, V. Saragadam, M. Abbasi, M. Barnett, A.K. Vadathya, A. Veerarahavan, A. Sabharwal, Evolution of mood symptomatology through the

COVID-19 pandemic: findings from the CovidSense longitudinal study, *Cureus* 14 (10) (2022 Oct 3), e29876, <https://doi.org/10.7759/cureus.29876>.
 [3] M. Watanabe, Y. Umezaki, S. Suzuki, A. Miura, Y. Shinohara, T. Yoshikawa, T. Sakuma, C. Shitano, A. Katagiri, Y. Sato, M. Takenoshita, A. Toyofuku, Psychiatric comorbidities and psychopharmacological outcomes of phantom bite syndrome, *J. Psychosom. Res.* 78 (2015) 255–259, <https://doi.org/10.1016/J.JPSYCHORES.2014.11.010>.
 [4] A. Miura, T.T.H. Tu, Y. Shinohara, L. Mikuzuki, K. Kawasaki, S. Sugawara, T. Suga, T. Watanabe, M. Watanabe, Y. Umezaki, T. Yoshikawa, H. Motomura, M. Takenoshita, H. Maeda, A. Toyofuku, Psychiatric comorbidities in patients with atypical Odontalgia, *J. Psychosom. Res.* 104 (2018) 35–40, <https://doi.org/10.1016/J.JPSYCHORES.2017.11.001>.
 [5] M. Singer, N. Bulled, B. Ostrach, E. Mendenhall, Syndemics and the biosocial conception of health, *Lancet* 389 (2017) 941–950, [https://doi.org/10.1016/S0140-6736\(17\)30003-X](https://doi.org/10.1016/S0140-6736(17)30003-X).
 [6] C. Oppenauer, J. Burghardt, E. Kaiser, F. Riffer, M. Sprung, Psychological distress during the COVID-19 pandemic in patients with mental or physical diseases, *Front. Psychol.* 12 (2021), <https://doi.org/10.3389/FPSYG.2021.703488>.
 [7] C. Takao, G. Nayanar, A. Toyofuku, COVID-19 “syndemic”, *Br. Dent. J.* 231 (2021) 426, <https://doi.org/10.1038/S41415-021-3580-0>.
 [8] T.T.H. Tu, A. Toyofuku, H. Matsuoka, Coping well, *Br. Dent. J.* 229 (2020) 70, <https://doi.org/10.1038/S41415-020-1931-X>.

Chizuko Maeda^a, Motoko Watanebe^{a,*}, Trang Thi Huyen Tu^{a,b},
 Chihiro Takao^a, Gayatri Krishnakumar Nayanar^a, Risa Tominaga^a,
 Yasuyuki Kimura^a, Takahiko Nagamine^{a,c}, Akira Toyofuku^a
^a Department of Psychosomatic Dentistry, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University, Tokyo, Japan

^b Department of Basic Dental Sciences, Faculty of Odonto-Stomatology,
University of Medicine and Pharmacy at Ho Chi Minh City, Ho Chi Minh,
Viet Nam

^c Department of Psychiatric Internal Medicine, Sunlight Brain Research
Center, Yamaguchi, Japan

* Corresponding author at: Department of Psychosomatic Dentistry,
Graduate School of Medical and Dental Sciences, Tokyo Medical and
Dental University, 1-5-45 Yushima, Bunkyo-Ku, Tokyo 113-8510,
Japan.

E-mail address: totoompm@tmd.ac.jp (M. Watanebe).